

REMARKS

Reconsideration of the above-identified application in view of the present amendment is respectfully requested.

Claims 1-13 were rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which was not contained in the specification in such a way as to reasonably convey to one skilled in the art that the inventor at the time the application was filed had possession of the claimed invention.

The Office Action states that the nature of the polymer is critical or essential to the claimed invention, that a block copolymer must be derived from at least two different monomers, and that the reaction of hydroxyl terminal groups with an isocyanate to produce a polyurethane is distinctly different.

The Applicant would first like to bring to the Examiner's attention that the term "block polymer" is defined in Hawley's Condensed Chemical Dictionary, 3rd. edition, as a high polymer whose molecule is made up of alternating sections of one chemical composition separated by sections of a different chemical nature or by a coupling group of a low molecular weight. The reaction of GAP-1000 with a hydroxyl functionality of two or less and the 4,4'-methylene bis-phenylisocyanate, which is depicted on page 11 of the present application, produces a molecule that is made up of alternating sections of one chemical composition (i.e., GAP-1000) separated by section of different chemical nature (i.e., 4,4'-methylene bis-phenylisocyanate). Accordingly, the

reaction of a linear energetic polymer with a hydroxyl functionality of two or less and an aromatic diisocyanate produces polyurethane that is a block polymer.

Additionally, according to Webster's New International Dictionary, 3rd edition unabridged the term "copolymer" is defined as the product of copolymerization; the term "copolymerization" is defined as the act or process of copolymerizing; and the term "copolymerize" is defined as to polymerize together or used of two or more polymerizing substances that together form complex molecules usually of high molecular weight. The term "copolymerization" is also defined in the Text Book of Polymer Science, 3rd edition, as the polymerization of two or more monomers. Accordingly, one skilled in art would refer to the reaction product of a linear energetic polymer with a hydroxyl functionality of two or less and an aromatic diisocyanate as a "copolymer".

The Applicant, although not admitting that the term "block copolymer" is not described in the specification in such a way as to reasonably convey to one skilled in the art that the inventor had possession of the claimed invention, wishes to avoid any potential confusion and has therefore deleted the term "block" from the relevant portions of the specification and the term "linear block copolymer" from the claims.

Thus, the term block was deleted from the paragraph beginning at line 14, of page 7, the paragraph beginning at line 3, page 10, the paragraph beginning at line 2, page 11, the paragraph beginning at line 6, page 11, the paragraph

beginning at line 22, page 16, and the paragraph beginning at line 9, page 17.

The Office Action, also, states that the idea of physically cross-linking is also not correctly conveyed to one skilled in the art as is the idea of hydrogen bonding. The terms have accordingly been eliminated from the claims.

Claims 1-13 were further rejected under 35 U.S.C. § 112, 2nd paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Office Action states that in claim 1 it is not clear what is required by "polyurethane thermoplastic elastomer", particularly since the following language does not describe or form the basis for such, but merely recites what would be required for an ordinary polyurethane polymer. Moreover, the Office Action states that the claim language of "aromatic diisocyanate and a linear energetic polymer" does not form a linear block copolymer instead forming a polyurethane to the person of ordinary skill in the art.

Claim 1 has been cancelled and rewritten as claim 20.

The relevant parts of claim 20 now recite:

" a thermoplastic elastomer, said thermoplastic elastomer being a polyurethane formed from an aromatic diisocyanate, a linear energetic polymer with a hydroxyl functionality of two or less, and optionally a secondary diol, wherein the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1."

Support for the terms recited in claim 20 can be found in specification of the present application. The terms "thermoplastic elastomer" is found at line 14, page 7, and at lines 10-15, page 17. The term "polyurethane" is found throughout the application and is depicted on page 11. The NCO/OH ratio is described at lines 14-23, page 9.

The other 35 U.S.C. §112 rejections are no longer relevant as the claims 2-13 have been cancelled and rewritten.

Claims 1-13 are rejected under 35 U.S.C. §103(a) as being unpatentable over Re. 36,296 to Zeigler in view of U.S. Patent No. 5,164,521 to Manzara et al., U.S. Patent No. 4,393,199 to Manser, and U.S. Patent No. 5,319,037 to Ochoa Gomez.

As noted above, claim 1-13 were cancelled and rewritten respectively as claims 20-37.

Claim 20 recites an apparatus comprising an inflatable vehicle occupant protection device and a gas generating material that, when ignited, produces gas to inflate the inflatable vehicle occupant protection device. The gas generating material comprises an inorganic oxidizer salt and a thermoplastic elastomer. The thermoplastic elastomer is a polyurethane formed from an aromatic diisocyanate, a linear energetic polymer with a hydroxyl functionality of two or less, and optionally a secondary diol. The amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest (1) a thermoplastic elastomer that is a polyurethane and (2) that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

As noted in the Office Action Zeigler teaches the basic idea of an air bag system with a gas generating composition that comprises an oxidizer of ammonium nitrate, a fuel (e.g., HMX or RDX), and an energetic GAP binder. Zeigler further teaches that the GAP binder is normally a liquid and needs to be formulated with an appropriate amount of curative to cross-link the binder. A suitable curative is listed as a multifunctional isocyanate such as hexamethylene diisocyanate.

Zeigler does not teach that the cross-linked binder is a thermoplastic elastomer. In fact, a cross-linked binder of GAP and a multifunctional isocyanate would not form a thermoplastic elastomer. The cross-linking would prevent the cross-linked binder from behaving like a thermoplastic (i.e., softening when exposed to heat and returning to its original condition when cooled or dissolving in solvents and returning to its original condition when the solvent is removed). A cross-linked binder of GAP and a multifunctional isocyanate would be a thermosett elastomer or vulcanized elastomer. A thermosett elastomer or vulcanized elastomer does not soften when exposed to heat and return to its original condition when cooled and is not capable of being dissolved in solvents or

returning to its original condition when the solvent is removed.)

Additionally, Zeigler do not teach using an aromatic diisocyanate and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

Manzara et al. teach a hydroxyl terminated poly(glycidyl azide) with a hydroxyl functionality of up to 4 or more. Manzara et al. further teach that when using GAP as a binder for a solid rocket propellant GAP can be mixed with a polyisocyanate curing agent.

Manzara et al. do not teach that the glycidyl azide polymers can be formed into thermoplastic elastomers. Manzara et al. teach that glycidyl azide polymers converted to polyurethanes have good mechanical properties over the temperature range of -50°C to 120°C but can be advantageously be decomposed at temperatures below 130°C-150°C. (Col. 16, lines 46-48). Decomposition of a glycidyl azide polyurethane at temperatures below 130°C-150°C indicates that the polyurethane is not a thermoplastic. Thermoplastics do not decompose at temperatures below 130°C-150°C, but instead melt. Thus, there is nothing in Manzara et al. that discloses or suggests a thermoplastic elastomer that is a polyurethane.

Additionally, there is nothing in Manzara et al. that discloses or suggests that the amount of aromatic

diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

Manser teach that block polymers such as THF and BDO can be formed with functionalities ranging from 0 to 4 (column 6, lines 35-47). Manser further teaches that if a difunctional polymer is copolymerized with a monomer, such as a diisocyanate, a linear copolymer will result and that if a trifunctional polymer is copolymerized with a diisocyanate, a cross-linked polymer will result. (Column 6, lines 49-67). Manser teach difunctional and trifunctional polymers can be mixed to control with exactitude the cross-linking density.

Manser does not teach that block polymers such as THF and BDO can be copolymerized with a monomer such as a diisocyanate to form a thermoplastic elastomer. Manser, as noted above, teaches controlling the cross-linking density of the polymer. A cross-linked polymer would not be a thermoplastic elastomer because the cross-linking would inhibit thermoplastic behavior.

Additionally, as discussed with regard to Manzara et al., there is nothing that discloses or suggests that the amount of aromatic diisocyanate, and linear energetic polymer used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

Ochoa Gomez et al. teach a method of synthesizing a glycidyl azide polymer with a hydroxyl functionality of two or more from polyepichlorohydrin.

Ochoa Gomez et al. do not teach reacting the GAP polymer with an aromatic isocyanate to form a thermoplastic elastomer or controlling the amount of aromatic diisocyanate, glycidyl azide polymer, and secondary diol so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1.

Thus, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not teach a thermoplastic elastomer which is a polyurethane formed from glycidyl azide polymer, an aromatic diisocyanate, and optionally a secondary diol. Moreover, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not teach controlling the amount of aromatic diisocyanate, glycidyl azide polymer, and secondary diol so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 30 is patentable over Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al., and allowance of Claim 30 is respectfully requested.

Claim 21 depends from claim 20 and further recites that the linear energetic polymer is selected from the group consisting of glycidyl azide polymer, poly-glycidyl nitrate, poly-nitratomethyl-methyl oxetane, poly-bisazido-methyloxetane, poly-azidomethyl-methyloxetane, poly-nitraminomethyl-methyloxetane, and diethyleneglycoltriethyleneglycolnitraminodiacetic acid.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 21 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 21.

Claim 22 depends from claim 20 and further recites that the aromatic diisocyanate is 4,4'-methylene bis-phenylisocyanate.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 22 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 22.

Claim 23 depends from claim 20 and further recites that the linear energetic polymer is glycidyl azide polymer with a hydroxyl functionality of two or less.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not

disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 23 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 23.

Claim 24 depends from claim 23 and further recites that the glycidyl azide polymer has a molecular weight from about 25,000 g/mole to about 35,000 g/mole and a hydroxyl functionality of 2.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Moreover, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. glycidyl azide polymer has a molecular weight from about 25,000 g/mole to about 35,000 g/mole and a hydroxyl functionality of 2. Therefore, claim 24 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 24.

Claim 25 depends from claim 20 and further recites that the inorganic salt oxidizer is selected from the group consisting of alkali metal nitrates, alkaline earth metal

nitrate, alkali metal perchlorates, alkaline earth metal perchlorates, ammonium perchlorate, and ammonium nitrate.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 25 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 25.

Claim 26 depends from claim 20 and further recites that the inorganic salt oxidizer is phase stabilized ammonium nitrate.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 26 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 26.

Claim 27 depends from claim 20 and recites that the gas generating material further comprises a supplemental fuel.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 27 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 27.

Claim 28 depends from claim 27 and further recites that the supplemental fuel is cyclotrimethylenetrinitramine.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 28 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 28.

Claim 29 depends from claim 20 and further recites that the components of the gas generating material are present in a weight ratio adjusted to produce upon combustion a reaction gas product that consists essentially of carbon dioxide, nitrogen, and water.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 29 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 29.

Claim 30 depends from claim 20 and further recites that the polyurethane is formed from an aromatic diisocyanate, a linear energetic polymer with a hydroxyl functionality of two or less, and a secondary diol.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Moreover, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a polyurethane is formed from an aromatic diisocyanate, a linear energetic polymer with a hydroxyl functionality of two or less, and a secondary diol. Therefore, claim 30 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 30.

Claim 31 depends from claim 30 and further recites that the secondary diol is 2,4-pentanediol.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Moreover, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a polyurethane is formed from an aromatic diisocyanate, a linear energetic polymer with a hydroxyl functionality of two or less, and a 2,4-pentanediol. Therefore, claim 31 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 31.

Claim 32 recites an apparatus comprising an inflatable vehicle occupant protection device and a gas generating material that, when ignited produces gas to inflate the inflatable vehicle occupant protection device. The gas generating material comprises an inorganic oxidizer salt and a thermoplastic elastomer. The thermoplastic elastomer is a polyurethane formed from an aromatic diisocyanate, a glycidyl azide polymer with a hydroxyl functionality of two or less, and optionally a secondary diol. The amount of aromatic diisocyanate, glycidyl azide polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of

isocyanate groups to the hydroxyl groups used to form the polyurethane thermoplastic elastomer is about 1.

Claim 30 contains limitations similar to claim 20. As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 32 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 32.

Claim 33 depends from claim 32 and further recites that the aromatic diisocyanate is 4,4'-methylene bisphenylisocyanate.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 33 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 33.

Claim 34 depends from claim 32 and further recites that the secondary diol is 2,4-pentanediol.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 34 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 34.

Claim 35 recites an apparatus comprising an inflatable vehicle occupant protection device and a gas generating material that, when ignited produces gas to inflate the inflatable vehicle occupant protection device. The gas generating material comprises about 65% to about 90%, by weight of the gas generating material, an inorganic oxidizer salt and about 5% to about 35%, by weight of the gas generating material a thermoplastic elastomer. The thermoplastic elastomer being a polyurethane formed from 4,4'-methylene bis-phenylisocyanate, a glycidyl azide polymer with a hydroxyl functionality of two or less, and optionally a secondary diol. The amount 4,4'-methylene bis-phenylisocyanate, glycidyl azide polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to the hydroxyl groups used to form the polyurethane thermoplastic elastomer is about 1.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not

disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 35 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 35.

Claim 36 depends from claim 35 and further recites that the polyurethane is formed from 4,4'-methylene bis-phenylisocyanate, a glycidyl azide polymer with a hydroxyl functionality of two or less, and a secondary diol.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate, linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 36 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 36.

Claim 37 depends from claim 36 and further recites that the secondary diol is 2,4-pentanediol.

As discussed above with respect to claim 20, Zeigler in view of Manzara et al., Manser, and Ochoa Gomez et al. do not disclose or suggest a thermoplastic elastomer that is a polyurethane and that the amount of aromatic diisocyanate,


linear energetic polymer, and secondary diol used to form the polyurethane are controlled so that the ratio of isocyanate groups to hydroxyl groups used to form the polyurethane is about 1. Therefore, claim 37 is allowable for the same reasons as claim 20 and for the specific limitations recited in claim 37.

In view of the foregoing, it is respectfully submitted that the above-identified application is in condition of allowance, allowance of the above-identified application is respectfully requested.

Attached hereto is a marked-up version of the changes made to the specification by the current amendment. The attached page is captioned "Version with markings to show changes made."

Please charge any deficiency or credit any overpayment in the fees for this amendment to our Deposit Account No. 20-0090.

Respectfully submitted,


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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Paragraph beginning at line 14, of page 7 has been amended as follows:

The polyurethane thermoplastic elastomer of the present invention comprises linear ~~block~~ copolymers that are physically cross-linked by hydrogen bonds.

Paragraph beginning at line 3, page 10 has been amended as follows:

The isocyanate groups of the aromatic diisocyanate and the hydroxyl groups of the linear energetic polymers react, in a urethane type reaction, to form linear ~~block~~ copolymers with urethane linkages. The linear ~~block~~ copolymers have alternating sequences of elastomeric segments and thermoplastic segments. The elastomeric segments are provided by the linear energetic polymer and the thermoplastic segment are provided by the urethane linkage.

Paragraph beginning at line 2, page 11 has been amended as follows:

The linear ~~block~~ copolymers formed from 4,4'-methylene bis-phenylisocyanate and GAP 1000 (i.e. GAP-M) have an average molecular weight of about 25,000 g/mole to about 35,000 g/mole.

Paragraph beginning at line 6, page 11 has been amended as follows:

Each of the urethane linkages within the copolymers so formed are capable of forming hydrogen bonds with an oxygen of the urethane linkage of another linear ~~block~~ copolymer or with an oxygen of the linear energetic polymer of another linear ~~block~~ copolymer. By doing so, the linear ~~block~~ copolymers physically cross-link and form the polyurethane thermoplastic elastomer.

Paragraph beginning at line 22, page 16 has been amended as follows:

The solvent is evaporated from the body of gas generating material by heating the body of gas generating material at an elevated temperature (i.e. about 50°C to about 60°C). Removal of the solvent causes the linear ~~block~~ copolymers of the polyurethane thermoplastic elastomer to cross-link physically and form an elastic matrix within the body of gas generating material. The gas generating material is generally a resilient solid, like a hard rubber, capable of withstanding shock without permanent deformation at 85°C and not brittle at -40°C.

Paragraph beginning at line 9, page 17 has been amended as follows:

An advantage of the gas generating material of the present invention is that it can be easily recycled, unlike gas generating material formed from conventional thermoplastic elastomers. The gas generating material is recycled by mixing

the gas generating material with an organic solvent, such as ethyl acetate, which dissolves the polyurethane thermoplastic elastomer by causing dissociation of the hydrogen bonds which cross-link the liner ~~block~~ copolymers of the polyurethane thermoplastic elastomer. The inorganic salt oxidizer and other ingredients, such as supplemental fuel, burn rate modifier, plasticizer, and coolant, are recovered from the solution of gas generating material and organic solvent by extraction. The remaining solvent is evaporated from the solution, leaving the polyurethane thermoplastic elastomer.